Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Solenoid for Laser Induced Plasma Experiments at Janus SALLEE KLEIN, HEATH LEFERVE, University of Michigan, GREGORY KEMP, DEREK MARISCAL, Lawrence Livermore National Laboratory, ALEX RASMUS, University of Michigan, Los Alamos National Laboratory, JACKSON WILLIAMS, Lawrence Livermore National Laboratory, ROBB GILLESPIE, University of Michigan, MARIO MANUEL, General Atomics, CAROLYN KURANZ, PAUL KEITER, R DRAKE, University of Michigan — Creating invariant magnetic fields for experiments involving laser induced plasmas is particularly challenging due to the high voltages at which the solenoid must be pulsed. Creating a solenoid resilient enough to survive through large numbers of voltage discharges, enabling it to endure a campaign lasting several weeks, is exceptionally difficult. Here we present a solenoid that is robust through 40 μs pulses at a $\sim$13 kV potential. This solenoid is a vast improvement over our previously fielded designs in peak magnetic field capabilities and robustness. Designed to be operated at small-scale laser facilities, the solenoid housing allows for versatility of experimental set-ups among diagnostic and target positions. Within the perpendicular field axis at the center there is 300 degrees of clearance which can be easily modified to meet the needs of a specific experiment, as well as an $\sim$f/3 cone for transmitted or backscattered light. After initial design efforts, these solenoids are relatively inexpensive to manufacture.

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Date submitted: 14 Jul 2017 Electronic form version 1.4